

# EVALUATION OF PUBLIC PRIVATE PARTNERSHIP FOR INFRASTRUCTURE PROVISION

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***Thesis Abstract:*** This thesis evaluates the performance of PPP from the macroeconomic policy point of view and thus study the functionality of PPP in the infrastructure-growth nexus in the endogenous growth models. This thesis studies the supply-side economics of the infrastructure provision. Chapter 1 details the introduction, literature survey and motivation underlying the assumptions made in the model of this thesis. In chapter 2, infrastructure is a flow variable and a comparative study of the private capital and public capital used as complementary goods and substitute goods in the infrastructure production is analysed. A growth-maximizing and optimal fiscal policy is analysed to find the optimal mode of infrastructure provision. A transitional dynamic and analysis for the properties of steady-state growth equilibrium of competitive economy and command economy for both substitute and complementary case are also done in chapter 2. We find from the study that command economy growth rate may be less than that of a competitive economy for the complementary relationship between private and public capital. But, in the case of a perfect substitute relationship between public capital and private capital, the command economy growth rate is always higher than the competitive economy growth rate. However, when private capital and public capital are perfect substitutes for each other, the growth-maximizing tax rate is zero. We find a unique, interior growth-maximizing tax rate and an optimal tax rate for the complementary relationship between private investment and public investment. The crux of the model shows that PPP is

always an optimal solution for financing infrastructure no matter the relationship between the private capital and public capital are substitute or complements but PPP is not growth maximizing in the case when public capital and private capital are perfect substitutes.

Chapter 3 develops an endogenous growth model with the non-rival but excludable public goods. We seek to answer the question that whether this kind of infrastructure should be provided by a pure private firm or purely by the state or by Public-Private Partnership (PPP). This chapter also addresses the question that if the government invests in this type of infrastructure, how should it finance the manufacturing cost - through accumulating debt or by imposing a tax or charging user fees? Also, we study the public and PPP provision under the three budgetary regimes of the government: (a) zero debt (b) constant debt and (c) accumulating debt regimes. Our model finds that pure private provision of infrastructure yields higher growth rate compared to pure public provision. We also find that under the balanced budget when the government charges user fees and imposes tax to finance the infrastructure cost, the growth maximizing tax rate is zero. However, under the accumulating debt regime, the growth maximizing tax rate is positive. It is also found that the maximum growth rate in the public provision of infrastructure under the accumulating debt regime is greater than the growth rate in the pure private provision or pure public provision of infrastructure under the balanced budget regime if primary surplus does not react to changes in GDP and changes in public debt strongly. This result contradicts the result found by Greiner (2014) that says the growth rate obtained under a balanced budget is always greater than that obtained under a deficit budget. When the government provides infrastructure charging user fees, imposing tax and also issuing the bond, the steady-state equilibrium involves high public debt. The interest payment of the past accumulated public debt has a positive effect on the growth of public debt and has a negative effect on the GDP growth rate. The sustainable public debt for the provision of the impure public good justifies the adoption of PPP mode for the infrastructure provision.

We also find that PPP yields a higher growth rate compared to public provision of infrastructure for both, under a balanced budget and accumulating debt. In the numerical example, we find that the PPP projects with more than 50% of investment by the private firm yield the highest growth rate.

In chapter 4, we build a theoretical model comprised of the corruption-inherent quality-adjusted or the quality-compromised investment in a PPP model with flow and stock concepts of infrastructure services. This chapter suggests that in a small open economy, there is a positive relationship between fraction of domestic capital used in corruption free final output sector and corruption in infrastructure sector. We also find that corruption in the infrastructure sector has a damaging effect on the growth rate and also on foreign capital inflow through the PPP projects in infrastructure sector for both the stock and flow concept of infrastructure provision of host country. This result is similar to the results found for the relationship between corruption and foreign capital inflow by Cuervo-Cazurra (2008), Fredriksson et al. (2003), Coppier et al. (2013), and Cieslik and Goczek (2018). We also obtain an optimal bribe for which the consumption of the non-benevolent government relative to the host country's final output is maximized when infrastructure capital is a stock capital. We also find that there exists a positive relationship between corruption and the host country's aggregate output relative to the foreign capital inflow for the PPP mode of provision of infrastructure in a small open economy. However, for the domestic output to be positive, a bribe must be less than a critical level. Chapter 5 is the last chapter of this thesis, where the results and findings are discussed and summarized. This chapter also gives an account of the limitations of this thesis and suggests a few other research options relating to the PPP mode of infrastructure provision to be considered for future research.